

Page 1		Page 2	Page 4
1	UNITED STATES DISTRICT COURT DISTRICT OF SOUTH DAKOTA SOUTHERN DIVISION	1	S T I P U L A T I O N
2	SIOUX STEEL COMPANY, a South Dakota corporation, plaintiff, vs.	2	It is hereby stipulated and agreed, by and between the 3 above-named parties through their attorneys of record, whose 4 appearances have been hereinabove noted, that the deposition 5 of CHAD KRAMER, PE, may be taken at this time and place; 6 that is, at the offices of Boyce Law Firm, LLP, 300 South
7	KC ENGINEERING, P.C., an Iowa corporation, Defendant.	7	7 Main Avenue, Sioux Falls, South Dakota, on the 29th day of 8 September, 2016, commencing at the hour of 9:03 a.m.; said 9 deposition taken before Audrey M. Barbush, a Registered 10 Professional Reporter and Notary Public within and for the 11 State of South Dakota; said deposition taken for the purpose 12 of discovery or for use at trial or for each of said 13 purposes, and said deposition is taken in accordance with 14 the applicable Rules of Civil Procedure as if taken pursuant 15 to written notice. Objections, except as to the form of the 16 question, are reserved until the time of trial. Insofar as 17 counsel are concerned, the reading and signing of the 18 transcript by the witness is not waived.
19	Deposition of: CHAD KRAMER, PE Date: September 29, 2016 Time: 9:03 a.m.	19	-oOo-
20	APPEARANCES	20	
21	Mr. G. Verne Goodsell Goodsell Quinn, LLP Rapid City, South Dakota	21	
22	and	22	
23	Ms. Amy Ellis Sioux Steel Company General Counsel Sioux Falls, South Dakota	23	CHAD KRAMER, PE,
24	Attorneys for the Plaintiff	24	called as a witness, having been first duly sworn,
25	Mr. Michael F. Tobin Boyce Law Firm, LLP Sioux Falls, South Dakota	25	testified as follows:
1	Attorney for the Defendant		
2	ALSO PRESENT: Jason O'Mara, KC Engineering		
3	REPORTED BY: Audrey M. Barbush, RPR		
4	I N D E X	1	EXAMINATION
5	Examination:	2	BY MR. TOBIN:
6	By Mr. Tobin	3	Q Good morning, Chad.
7	Exhibit Nos.:	4	A Good morning.
8	<u>Exhibit 5</u> - Design file, PLF 1363-1385	5	Q We just met. My name is Mike Tobin, and you understand
9	<u>Exhibit 6</u> - Weekly Engineering Report, 7-20-12	6	that I represent KC Engineering in this lawsuit brought
10	PLF 1089	7	by Sioux Steel?
11	<u>Exhibit 7</u> - KC Engineering Proposal, 7-30-12	8	A Yes.
12	KC 81-82	9	Q I don't believe we've ever met before.
13	<u>Exhibit 8</u> - Weekly Engineering Report, 8-10-12	10	A We have not.
14	PLF 1079-1080	11	Q I'm going to guess that you went over some of this with
15	<u>Exhibit 9</u> - KC Engineering Analysis, 8-28-12	12	the attorneys, but just as a reminder:
16	PLF 3-32	13	If I ask a question that you don't understand,
17	-ooo-	14	will you please stop me and let me know?
18	(The original transcript was provided to Mr. Tobin.)	15	A Yes.
19	-ooo-	16	Q Because I want to make sure that any answer you give,
20		17	you understand the question when you give that answer.
21		18	Okay?
22		19	A Understood.
23		20	Q And then let's both try not to talk over each other,
24		21	and I need to do that as well. The court reporter
25		22	appreciates if she only takes down one thing at a time.
		23	So if I start to talk before you're done giving an
		24	answer, you can put your hand up or otherwise let me
		25	know, and I'll let you finish your answer. Okay?

<p>1 And I forgot the gentleman's name who is now 2 there. 3 A Curtis. 4 Q -- Curtis? 5 A Yes. 6 Q We're here to talk about a hopper bin that collapsed in 7 Mexico in February of '15, correct? 8 A Yes. 9 Q Did -- and we're going to get into it in a lot of 10 detail, but did either of those other engineers that 11 you just mentioned, did they play any role in the 12 design or development of the hopper bin we're here to 13 talk about? 14 A They did not. 15 Q They did no work, no calculations, no review of any 16 kind? 17 A No. 18 Q Other than KC Engineering, did any other outside 19 entity, whether that's a person or a company, have any 20 role from a design perspective for that hopper bin? 21 A No. 22 Q Is it accurate that you designed the hopper bin at 23 issue? 24 A Yes. 25 Q It's my understanding that these hopper bins were</p>	Page 9	<p>1 Q From an engineering perspective you'll agree with me 2 that soy meal is a -- it's a different animal, so to 3 speak, than a free-flowing grain? 4 A Not necessarily. 5 Q Why do you say that? 6 A It's a processed commodity. So it is not necessarily a 7 free-flowing grain, but it's subject to the same 8 dynamic flow conditions that other grains would be 9 subject to in a hopper, and those dynamic flow 10 conditions are accounted for with the same overpressure 11 factor that's applied to static load cases. 12 Q So if I'm understanding that correctly, if you're 13 designing a hopper bin for soy meal, you would use the 14 same parameters as you would for any other free-flowing 15 commodity? 16 A The same math is used, yes. 17 Q And I believe from some of the experts in this case 18 they've identified that the overpressure factor is a 19 1.4? 20 A Yes. 21 Q And you would use that whether it's soy meal or a 22 free-flowing grain? 23 A Yes. 24 Q But to go back to my initial point, when you were 25 designing these bins in -- I keep saying 2012. Does</p>
<p>1 something new for Sioux Steel back in kind of the 2012 2 time frame. Is that an accurate statement? 3 A Yes. 4 Q What was the genesis, if you know, for why Sioux Steel 5 wanted to go into that market of the hopper bins? 6 A They wanted to expand their product line to compete 7 with others in the industry who manufactured hoppers. 8 Q Who back in 2012 would have had a decent share of the 9 market for hopper bins? Who were the main competitors? 10 A The big ones I suppose would be Sukup, Brock, GSI, 11 Behlen, Chief... 12 I mean everybody had a line of hopper bins. 13 Q Prior to the development of the hopper bin at issue in 14 2012, did Sioux Steel otherwise, to your knowledge, 15 market, manufacture, and sell storage facilities for 16 soy meal? 17 A No. 18 Q When you were designing the hopper bin that's at issue 19 in this case, were you contemplating that soy meal 20 would be used in it? 21 A We utilized a bulk density for our design that would be 22 for multiple commodities. 23 Q But was soy meal ever contemplated by you as being used 24 in those bins? 25 A Soy meal wasn't specifically discussed.</p>	Page 10	<p>1 that jibe with your memory that the hopper bins at 2 issue kind of got going in 2012? 3 A Yes. 4 Q But soy meal was not a particular thing you had in mind 5 when you were doing the design for these hopper bins? 6 A Soy meal was not specifically discussed. 7 Q And it sounds like from your previous answer soy meal 8 was not something that Sioux Steel was otherwise in the 9 market of anyway. 10 A Not to my knowledge. 11 Q Have you personally ever designed any sort of a 12 structure -- a silo, a bin, anything -- for the storage 13 of soy meal? 14 A I have not. 15 Q To your knowledge today does Sioux Steel manufacture or 16 sell any sort of storage device for soy meal? 17 A Not specifically for soy meal. 18 Q To your knowledge who was the driving force in wanting 19 to do these hopper bins and expand into that potential 20 market? 21 A It was a sales request. 22 Q Do you recall from who specifically or -- 23 A I do not. 24 Q And when you say a sales request, was it -- what I'm 25 trying to get a sense of: Was this something on a</p>

<p>1 A Yes.</p> <p>2 Q And not all pages in <u>Exhibit 5</u> have a date on them, but</p> <p>3 would it be fair as a ballpark that most of this</p> <p>4 design, if not all of it, would have been done in that</p> <p>5 February of 2012 time frame?</p> <p>6 A Yes.</p> <p>7 Q And all the work represented in <u>Exhibit 5</u> is yours?</p> <p>8 A Yes.</p> <p>9 Q If you can turn to the third page -- and at the bottom</p> <p>10 that is 1365 -- on the bottom half there's a notation</p> <p>11 and then a diagram about grain load on hopper panels?</p> <p>12 A Yes.</p> <p>13 Q Do you see that?</p> <p>14 A Yes.</p> <p>15 Q And then there is a -- I don't know the shape, but you</p> <p>16 then have a diagram of a panel that would be in the</p> <p>17 hopper cone, correct?</p> <p>18 A Yes.</p> <p>19 Q And as I understand, at that point you are calculating</p> <p>20 the various loads and forces and stresses that are</p> <p>21 going to be on those panels at the bottom of the</p> <p>22 hopper?</p> <p>23 A Yes.</p> <p>24 Q And you're going to calculate the loads for the</p> <p>25 vertical seams as well as the horizontal seams?</p>	Page 17	<p>1 As a non-engineer help me understand why there's,</p> <p>2 you know, one row going up and down but multiple rows</p> <p>3 going horizontally.</p> <p>4 A There's different size fasteners that are used. So the</p> <p>5 vertical seam uses larger fasteners than the horizontal</p> <p>6 seams do.</p> <p>7 Q By using the term "fastener," is that the bolt itself</p> <p>8 or is that --</p> <p>9 A Yes.</p> <p>10 Q Okay. Now, below -- still on the top part of 1366 --</p> <p>11 there is a notation of "See Excel spreadsheet design</p> <p>12 calculations," correct?</p> <p>13 A Yes.</p> <p>14 Q And that's in your handwriting?</p> <p>15 A Yes.</p> <p>16 Q If you go in the document a ways to 1376, is page 1376</p> <p>17 within <u>Exhibit 5</u> -- is that the Excel spreadsheet that</p> <p>18 is referenced previously on 1366?</p> <p>19 A Yes.</p> <p>20 Q So on page 1376 this would show the math, if you will,</p> <p>21 for the forces and stresses that are going to be on</p> <p>22 that vertical seam?</p> <p>23 A Yes.</p> <p>24 Q And I keep using the term "vertical seam," but on</p> <p>25 page 1376 it's titled "vertical splices."</p>
<p>1 A Yes.</p> <p>2 Q And the vertical seam, is that represented by the</p> <p>3 notation Nn -- or is that an Nh?</p> <p>4 A It's an m and an h.</p> <p>5 Q So the capital N lowercase h, that is the figure for</p> <p>6 the stresses on the vertical seams?</p> <p>7 A Yes.</p> <p>8 Q And in your diagram you represent the vertical seam as</p> <p>9 having a single row of bolts, correct?</p> <p>10 A Yes.</p> <p>11 Q And your horizontal seam has three rows of bolts, at</p> <p>12 the top anyway?</p> <p>13 A At the top of the panel, yes.</p> <p>14 Q And at the bottom does it have two rows?</p> <p>15 A Yes.</p> <p>16 Q Then if you go to the next page, 1366, at the top of</p> <p>17 that page there is a blowup, if you will, in your</p> <p>18 handwriting for particularly the vertical seam?</p> <p>19 A Yes.</p> <p>20 Q And again the vertical seam is represented by one row</p> <p>21 of bolts?</p> <p>22 A Yes.</p> <p>23 Q Do you know why you have one row of bolts for the</p> <p>24 vertical seam but multiple rows of bolts for the</p> <p>25 horizontal seams?</p>	Page 18	<p>1 Is that basically the same thing?</p> <p>2 A Yes.</p> <p>3 Q So we're talking about that vertical single row of</p> <p>4 bolts on the panels for the hopper cone?</p> <p>5 A Yes.</p> <p>6 Q And as I understand the spreadsheet, you have three</p> <p>7 different snapshots, is what I'm going to call them, of</p> <p>8 the forces: One at the cone diameter of 28 feet, then</p> <p>9 at 15 feet, and then at 4 feet?</p> <p>10 A Yes.</p> <p>11 Q And that would make sense because obviously this cone</p> <p>12 starts wider at the top and obviously gets more narrow</p> <p>13 at the bottom?</p> <p>14 A Yes.</p> <p>15 Q And I believe that angle is about 45 degrees, is it</p> <p>16 not?</p> <p>17 A It is 45 degrees.</p> <p>18 Q Why -- just curious. Why did you pick three different</p> <p>19 diameters, and why did you pick the three that are</p> <p>20 there?</p> <p>21 A I picked different diameters because we've got</p> <p>22 different bolt spacings in those vertical seams. So --</p> <p>23 and we've got two different panels in there as well, so</p> <p>24 it would be a transition from the upper panel to the</p> <p>25 lower panel. And that's what those diameters were</p>

<p>1 chosen for.</p> <p>2 Q Is there a particular computer program outside of Excel</p> <p>3 that helps you do this, or is your Excel set up to</p> <p>4 essentially produce this mathematical calculation on</p> <p>5 page 1376?</p> <p>6 A I'm not sure I understand your question.</p> <p>7 Q Well, how does all the information, all the math on</p> <p>8 page 1376 -- I mean how does that get there? I'm</p> <p>9 assuming you have to input some information.</p> <p>10 A Yes.</p> <p>11 Q And then is the Excel just doing the math for you?</p> <p>12 A Yes.</p> <p>13 Q And is the information that you're inputting, is that</p> <p>14 the stuff below the table -- or above the table and</p> <p>15 below the "Hopper Panel Vertical Splices" heading?</p> <p>16 A Yes.</p> <p>17 Q At the far right there's the utility ratio?</p> <p>18 A Utilization ratio.</p> <p>19 Q Utilization ratio. Thank you.</p> <p>20 What does that tell someone like yourself? What</p> <p>21 do those ratios mean?</p> <p>22 A It tells you how much the -- how much of the allowable</p> <p>23 capacity is utilized.</p> <p>24 Q Okay. And it's my understanding that we want to be</p> <p>25 below 1; is that correct?</p>	Page 21	<p>1 problem?</p> <p>2 A Yes.</p> <p>3 Q So you would have seen that we have a problem at the</p> <p>4 28-foot diameter --</p> <p>5 A Yes.</p> <p>6 Q -- and also at the 15-foot diameter?</p> <p>7 A Yes.</p> <p>8 Q In fact, at the 28-foot diameter we have a very big</p> <p>9 problem, correct?</p> <p>10 A The ratio is over 1, yes.</p> <p>11 Q I mean it's -- I don't want to parse words with you,</p> <p>12 but we are -- we're almost up to 4.</p> <p>13 A Yes.</p> <p>14 Q What did you then do, if anything, after you saw those</p> <p>15 numbers to change your design in any way?</p> <p>16 A We didn't know that these numbers were at those levels</p> <p>17 until post failure, and at that time we made design</p> <p>18 changes.</p> <p>19 Q So -- okay. You never saw or appreciated these numbers</p> <p>20 pre-failure?</p> <p>21 A I did not.</p> <p>22 Q Was that a mistake on your part? I mean you should</p> <p>23 have realized these numbers pre-failure?</p> <p>24 Let me start over.</p> <p>25 The bin that was manufactured and shipped down to</p>
<p>1 A Yes.</p> <p>2 Q So, for example, at the 28-foot diameter it's my</p> <p>3 understanding that those vertical seams would be</p> <p>4 overstressed by 389 percent.</p> <p>5 Is that how you would read that?</p> <p>6 A Yes.</p> <p>7 Q And then at 15 feet those vertical seams are</p> <p>8 overstressed by 152 percent?</p> <p>9 A They would be overstressed by 52 percent.</p> <p>10 Q And at 4 foot, we're below 1, so that would be a number</p> <p>11 that -- that we would like to see?</p> <p>12 A Yes.</p> <p>13 Q As a design engineer -- all three of those utilization</p> <p>14 ratios should be below 1, correct?</p> <p>15 A Yes.</p> <p>16 Q What did you do when you saw that at the 28-foot</p> <p>17 diameter and the 15-foot diameter we are above 1?</p> <p>18 A I'm not sure what exactly you're asking.</p> <p>19 Q Well, I'm assuming that when you did the design, you</p> <p>20 referenced and referred to this page --</p> <p>21 A Yes.</p> <p>22 Q -- 1376?</p> <p>23 A Yes.</p> <p>24 Q And as I understand it, if you see utilization ratios</p> <p>25 that are over 1, that's a signal that there's a</p>	Page 22	<p>1 Mexico and that failed --</p> <p>2 A Yes.</p> <p>3 Q -- it went out per the design in Exhibit 5?</p> <p>4 A Yes.</p> <p>5 Q And it would have had utilization ratios at the 28-foot</p> <p>6 and the 15-foot diameter that are problems?</p> <p>7 A Yes.</p> <p>8 Q And you'll agree with me that the hopper bin should not</p> <p>9 have gone down to Mexico with utilization ratios at</p> <p>10 those seams of 3.89 and 1.52?</p> <p>11 A Yes. There was a math error. Yes.</p> <p>12 Q And maybe I'm just trying to be too diplomatic, and</p> <p>13 maybe that's part of our disconnect here. But, I mean,</p> <p>14 a mistake was made by Sioux Steel in the design of this</p> <p>15 bin, correct?</p> <p>16 A Yes. I made a mistake, yes.</p> <p>17 Q And that mistake is yours?</p> <p>18 A Yes.</p> <p>19 Q Post failure you said you made some changes. What</p> <p>20 changes were made to account for these design errors?</p> <p>21 A We modified the hopper panels, changed the bolt</p> <p>22 spacing, the edge distances from the edge of the</p> <p>23 material to the edge of the bolts, increased that.</p> <p>24 Q Is it still just one row of bolts, or are there more</p> <p>25 rows now?</p>

	Page 25	Page 27
<p>1 A One row of bolts.</p> <p>2 Q So are the bolts just now bigger and further away from</p> <p>3 the edge of the panel, if you know?</p> <p>4 A The fasteners are still the same size. They're just</p> <p>5 farther away from the hole, and the spacing has been</p> <p>6 modified.</p> <p>7 Q While we're on the subject of post failure changes,</p> <p>8 would Sioux Steel allow soy meal to be put in the bins</p> <p>9 today, into a hopper bin today?</p> <p>10 A That's a bad question.</p> <p>11 Q Would Sioux Steel sell a hopper bin if they knew</p> <p>12 that its customer or end user was going to put soy meal</p> <p>13 in the hopper bin?</p> <p>14 A It kind of takes me back to the math, I guess, what I</p> <p>15 said before: You've got a commodity that is a</p> <p>16 processed commodity and -- but it's not a free-flowing</p> <p>17 grain. It's still subject to the same dynamic</p> <p>18 pressures, the dynamic flow conditions which are</p> <p>19 accounted for by the overpressure factor that's applied</p> <p>20 to the static load conditions.</p> <p>21 Q We're going to get into this in more detail later, but</p> <p>22 when you learned about this failure and that soy meal</p> <p>23 was involved, you were concerned and disappointed that</p> <p>24 soy meal was being used in this application; is that</p> <p>25 fair?</p>		
	Page 26	Page 28
<p>1 A Not necessarily. Maybe more concerned about the flow</p> <p>2 conditions of the soy meal and how the customer was</p> <p>3 going to get it in and out of the hopper.</p> <p>4 Q Is Chris Nelson a professional engineer?</p> <p>5 A He was not when he was at Sioux Steel.</p> <p>6 Q Is he no longer with Sioux Steel?</p> <p>7 A He's no longer with Sioux Steel.</p> <p>8 Q What about the previous gentleman who was your</p> <p>9 engineering manager towards the end of '11? I forgot</p> <p>10 his name.</p> <p>11 A Keith Polzin.</p> <p>12 Q Yeah. Was he a registered -- or a professional</p> <p>13 engineer?</p> <p>14 A No.</p> <p>15 Q From a design perspective internally at Sioux Steel,</p> <p>16 is there anybody that would review your design as set</p> <p>17 forth in Exhibit 5?</p> <p>18 A No.</p> <p>19 (Exhibit 6 is marked for identification.)</p> <p>20 BY MR. TOBIN:</p> <p>21 Q Chad, I'm going to hand you what's been marked as</p> <p>22 Exhibit 6, and Exhibit 6, per the subject, it's a</p> <p>23 weekly engineering report from you to Chris Nelson for</p> <p>24 the middle of July of 2012?</p> <p>25 A Yes.</p>	<p>1 Q And one of the topics on the engineering report is the</p> <p>2 hopper bins at issue?</p> <p>3 A Yes.</p> <p>4 Q My question is: I received a variety of these</p> <p>5 engineering reports from Sioux Steel's attorneys, but</p> <p>6 this is the first one, and I'm curious: Were you doing</p> <p>7 weekly engineering reports prior to the middle of July</p> <p>8 of 2012?</p> <p>9 A Yes, I would have been.</p> <p>10 Q And I know it's not an easy question to answer because</p> <p>11 we're not at your computer, but recognizing that you</p> <p>12 were working on the design back in February of 2012,</p> <p>13 would you expect that the hopper bin would have been</p> <p>14 part of the engineering reports before July of 2012?</p> <p>15 A It's tough for me to say without looking at old</p> <p>16 engineering reports.</p> <p>17 Q Did the attorneys for Sioux Steel -- did they task you</p> <p>18 with obtaining the engineering reports to ultimately</p> <p>19 give to me?</p> <p>20 A No.</p> <p>21 Q So you don't have a memory of going through your system</p> <p>22 to find engineering reports?</p> <p>23 A I do not.</p> <p>24 Q Ultimately Sioux Steel and KC Engineering entered into</p> <p>25 an agreement where KC Engineering would provide some</p> <p>1 Q services relative to these hopper bins, correct?</p> <p>2 A Yes.</p> <p>3 Q First of all, why? Why is Sioux Steel wanting to</p> <p>4 engage an outside entity to provide some services?</p> <p>5 A It was a new product for us, and we wanted to get an</p> <p>6 outside set of eyes on our product to vet it for us.</p> <p>7 Q And is that -- obtaining that outside set of eyes, is</p> <p>8 that something you could do on your own, or did you</p> <p>9 need approval or direction from someone above you?</p> <p>10 A I would have needed approval from somebody above me.</p> <p>11 Q Was there a question or concern that you had as to the</p> <p>12 propriety of your design that you wanted another set of</p> <p>13 eyes to look at it?</p> <p>14 A No.</p> <p>15 Q Maybe I'm wrong, but I'm going to assume that</p> <p>16 Sioux Steel does not send out its designs for all its</p> <p>17 products to get another set of eyes to look at it.</p> <p>18 Is that correct?</p> <p>19 A I can't comment on whether all their products have been</p> <p>20 sent out for design [sic], but this was a new product</p> <p>21 line and that's why we sent this one for -- to be</p> <p>22 reviewed.</p> <p>23 Q Would there be any way for you to estimate in your</p> <p>24 Sioux Steel career how many new products you've</p> <p>25 designed?</p>	

Page 29	Page 31
<p>1 A Not off the top of my head. That's pretty difficult.</p> <p>2 Q Is it a handful, or is it quite a few?</p> <p>3 A It's quite a few.</p> <p>4 Q On those projects that you design that are going to be new, are all or most of them sent out to an outside engineering firm to be reviewed?</p> <p>7 A It's a decision that's made based on the size or the scope of the project. A lot of the projects we work on are product line extensions. So it's similar construction, you know, that we do and it's just variations of that construction.</p> <p>12 Q Then what was it about this particular hopper bin that Sioux Steel wanted or felt it needed to get an outside review?</p> <p>15 A It was a completely new product line for us.</p> <p>16 Q What was new about it? I mean, as I understand, obviously Sioux Steel designs, sells, manufactures bins, correct?</p> <p>19 A Yes.</p> <p>20 Q Is it the hopper cone portion or the connection of a hopper to a bin? What was new about it to Sioux Steel?</p> <p>22 A With a hopper bin you're obviously supporting the entire grain mass with a cone structure as opposed to a flat-bottom bin that is, you know, on the ground, where you've got the grain being supported, you know, on the</p>	<p>1 20 degrees? That's kind of what I'm going at. Why --</p> <p>2 what guided you to get to a 45-degree-angle cone?</p> <p>3 A That can be changed. So that would have been a request</p> <p>4 based on what sales asked us to design.</p> <p>5 Q And as you sit here today do you have any recollection</p> <p>6 of any discussions as to a 45-degree angle versus a</p> <p>7 different degree angle?</p> <p>8 A No specific discussions, no.</p> <p>9 Q With the hopper bins that you designed and that</p> <p>10 Sioux Steel manufactured and sold -- I don't know if</p> <p>11 this is a fair question, but are they all</p> <p>12 45-degree-angle hoppers, or do you guys do some at</p> <p>13 different angles?</p> <p>14 A We now offer some at different angles.</p> <p>15 Q And that's all post failure?</p> <p>16 A Yes.</p> <p>17 Q What are some of the different angles that you do now?</p> <p>18 A We also have 60-degree hopper cones.</p> <p>19 Q From the stresses and loads in that cone, are they --</p> <p>20 how does the angle affect the pressure and the load?</p> <p>21 A It varies, but the same design standard is used to</p> <p>22 calculate the pressures in those cones.</p> <p>23 Q Back to the KC Engineering. You would have discussed</p> <p>24 with Chris Nelson hiring someone outside of Sioux Steel</p> <p>25 to do the review?</p>
<p>1 ground -- the majority of the grain being supported on the ground.</p> <p>3 Q So it's the hopper portion supporting the material in the bin, that was the new angle from Sioux Steel's perspective?</p> <p>6 A Yes.</p> <p>7 Q And it was that perspective that Sioux Steel wanted the outside review?</p> <p>9 A Yes.</p> <p>10 Q When you did your design, what were you relying upon? How do you get it to be at a 45-degree angle? I mean, how do you go do what you do?</p> <p>13 You're told that we need to go design these bins. What reference, what artwork, what do you have that will help you, guide you to go do that design?</p> <p>16 A We've got design standards that we use.</p> <p>17 Q And what would those be?</p> <p>18 A The ASABE design standard EP433 is one that we reference, and then there's a reference by Edwin and Charles Gaylord that we also use for design.</p> <p>21 Q You're talking to a guy who is not an engineer. So -- but the 45-degree angle of the cone, is that something that's driven by the standards, or is that something that you can choose?</p> <p>25 Could you make it 60 degrees? Could you make it</p>	<p>1 A Yes.</p> <p>2 Q I know you indicated you didn't have any particular concern other than it was a new product line.</p> <p>4 Did Chris have a particular concern that you recall?</p> <p>6 A No, not that I recall.</p> <p>7 Q Do you recall who would have broached the idea of having someone outside review this? Would that have been your idea? Chris's idea? or someone else?</p> <p>10 A All of the above. Chris and myself and others within the organization when we meet with operations and sales.</p> <p>13 Q Why KC Engineering? Did you vet any other companies?</p> <p>14 A We did not.</p> <p>15 Q Why KC Engineering?</p> <p>16 A That's a good question. I don't know in particular. We knew of them and knew that they had a reputation for doing, you know, agricultural-type designs.</p> <p>19 Q I mean to your knowledge was there any prior connection between the two companies?</p> <p>21 A Not that I recall.</p> <p>22 Q And it doesn't sound like you individually had a connection with anyone at KC Engineering?</p> <p>24 A I did not know anybody at KC.</p> <p>25 (Exhibit 7 is marked for identification.)</p>

<p>1 BY MR. TOBIN:</p> <p>2 Q I'm going to hand you what's been marked as <u>Exhibit 7</u>, 3 and <u>Exhibit 7</u> is the proposal from KC Engineering to 4 Sioux Steel to do some services relative to the hopper 5 cone at issue?</p> <p>6 A Yes.</p> <p>7 Q And that's dated July 30 of 2012?</p> <p>8 A It is.</p> <p>9 Q And it's specific to your attention, correct?</p> <p>10 A Yes.</p> <p>11 Q Under the scope of the engineering services, I mean it 12 certainly speaks for itself, but I kind of digest it as 13 two different things, and I just want to know if you 14 agree with me.</p> <p>15 Number one: KC Engineering is going to review 16 drawings and calculations provided by Sioux Steel, 17 correct?</p> <p>18 A [No audible response.]</p> <p>19 Q And then, second, they were going to do a RISA, 20 R-I-S-A, model of the hoppers.</p> <p>21 A Yes.</p> <p>22 Q Now, I break those down into two different functions. 23 Do you share that idea that there's two different 24 functions that KC Engineering is going to do?</p> <p>25 A I'm not sure I understand the question.</p>	<p>Page 33</p> <p>1 KC Engineering?</p> <p>2 A Not that I'm aware of.</p> <p>3 Q To your knowledge, did your design file, <u>Exhibit 5</u> -- 4 did any portion of <u>Exhibit 5</u> get sent to 5 KC Engineering?</p> <p>6 A I can't say with certainty if anything would or would 7 not have been sent to them at some point.</p> <p>8 Q As you sit here today, do you have any recollection of 9 sending your design file, <u>Exhibit 5</u>, to KC Engineering?</p> <p>10 A I don't specifically recall that.</p> <p>11 Q KC Engineering is of the position that they did not 12 receive anything in <u>Exhibit 5</u>.</p> <p>13 Would you have any reason to dispute that?</p> <p>14 A I would not.</p> <p>15 Q And then specifically within <u>Exhibit 5</u>, the Excel 16 spreadsheet on page 1376 that showed the utilization 17 ratios for the vertical splices, do you believe that 18 particular page was ever sent to KC Engineering?</p> <p>19 A I do not believe so.</p> <p>20 Q Is there a particular reason why the calculations from 21 Sioux Steel were not sent to KC Engineering?</p> <p>22 A No.</p> <p>23 Q It's my understanding that it took several weeks or a 24 month or two for KC Engineering to do their review and 25 then produce a report to you?</p>
<p>12 Q Well, I interpret their proposal as they're going to do 13 two things: They're going to review some drawings and 14 calculations, and then they're going to produce the 15 RISA model. I just want to know if you read it as 16 doing two tasks, one task, more tasks.</p> <p>17 A They would both need to be done in order to do a design 18 review. So I guess I don't know why they would be 19 different. I'm not understanding that question.</p> <p>20 Q You agree that Sioux Steel [sic] did perform and 21 produce the RISA model?</p> <p>22 MR. O'MARA: You mean KC Engineering.</p> <p>23 BY MR. TOBIN:</p> <p>24 Q I'm sorry. KC Engineering. They did produce a RISA 25 model for you?</p> <p>26 A Yes.</p> <p>27 Q And I believe that's, like, a 600-page document?</p> <p>28 A They sent the output from the RISA model.</p> <p>29 Q Did Sioux Steel -- did you provide drawings of the bins 30 to Sioux Steel [sic]?</p> <p>31 A Yes.</p> <p>32 Q Did you provide calculations to Sioux Steel [sic]?</p> <p>33 MR. O'MARA: To KC Engineering.</p> <p>34 BY MR. TOBIN:</p> <p>35 Q I mean to KC Engineering.</p> <p>36 Did you provide the calculations to</p>	<p>Page 34</p> <p>1 A If I recall it was about a month, yes.</p> <p>2 Q As you sit here today, can you recall how many 3 conversations you would have had with KC Engineering 4 about their work following this July 30 proposal?</p> <p>5 A I don't recall for sure.</p> <p>6 Q Do you recall having a conversation with KC Engineering 7 where you told KC Engineering that they would not need 8 to do any review of any calculations?</p> <p>9 A Could you repeat that question.</p> <p>10 Q Sure. Do you have any memory of any conversation with 11 KC Engineering where you told KC Engineering they would 12 not need to review any calculations?</p> <p>13 A No.</p> <p>14 Q You don't recall that?</p> <p>15 A No.</p> <p>16 Q The RISA model, why was that something you were 17 interested in from KC Engineering?</p> <p>18 A I don't know that we were particularly interested in 19 the RISA model specifically. In order for them to do a 20 design review they were going to have to, you know, 21 create a model of the hopper just like we would have 22 when we designed it. So that's why they would have 23 created the RISA model.</p> <p>24 Q Did you at Sioux Steel have the ability to create a 25 RISA model?</p>

<p>1 A We don't have that software, no.</p> <p>2 Q So when you did your design, you didn't have the 3 benefit of the RISA model?</p> <p>4 A No.</p> <p>5 Q Within the scope -- or below the scope, KC Engineering 6 lists out some standards that they are going to use or 7 reference in their review.</p> <p>8 Did you have any concern at the time in July of 9 2012 about any of those particular references or 10 standards?</p> <p>11 A No.</p> <p>12 Q In fact, if I remember correctly, they're probably some 13 of the same that you already told me that you were 14 using when you did your design?</p> <p>15 A Yes.</p> <p>16 Q As you sit here today, do you have any problem with 17 those four referenced standards?</p> <p>18 A I do not.</p> <p>19 Q And maybe I already asked this -- and if I did forgive 20 me -- but you told me that no calculations were sent to 21 KC Engineering, correct?</p> <p>22 A Correct.</p> <p>23 Q And why was that? Why were no calculations sent to 24 KC Engineering?</p> <p>25 MR. GOODSELL: I'm going to object to the</p>	Page 37	<p>1 A Yes.</p> <p>2 Q Who is Tim?</p> <p>3 A Tim is an R&D lab technician.</p> <p>4 Q At that time was Tim a Sioux Steel employee?</p> <p>5 A Yes.</p> <p>6 Q And then the other name is Chuck. Who is Chuck?</p> <p>7 A Chuck is part of operations and does bills of 8 materials.</p> <p>9 Q And obviously he would have been a Sioux Steel employee 10 at the time as well?</p> <p>11 A Yes.</p> <p>12 Q Are those three gentlemen still with Sioux Steel today?</p> <p>13 A Yes.</p> <p>14 Q Did any -- from previous answers I think I know that 15 the answer is no, but those gentlemen would not have 16 played any role in the design -- in your design of the 17 hopper bin at issue?</p> <p>18 A No.</p> <p>19 Q It appears to me from these engineering reports that in 20 the summer of 2012 -- and now we're into August per 21 this engineering report -- that Sioux Steel is going 22 forward with the actual manufacture of these hopper 23 bins. Is that accurate?</p> <p>24 A We are preparing for the manufacture of the hopper 25 bins, yes.</p>	Page 39
<p>1 question. It's been asked and answered.</p> <p>2 You can go ahead.</p> <p>3 THE WITNESS: I don't know why the calculations</p> <p>4 weren't sent. They weren't asked for. We weren't</p> <p>5 asked to provide calculations.</p> <p>6 (Exhibit 8 is marked for identification.)</p> <p>7 BY MR. TOBIN:</p> <p>8 Q Chad, I'm going to hand you what's been marked as 9 Exhibit 8, and Exhibit 8 is another weekly engineering 10 report from you to Chris Nelson, correct?</p> <p>11 A Yes.</p> <p>12 Q And this one is from August 10 of 2012?</p> <p>13 A Yes.</p> <p>14 Q On the second page under the hopper bins you note that 15 KC Engineering is in the process of their design 16 review?</p> <p>17 A Yes.</p> <p>18 Q And then you note some work that's being done, and I 19 just want to have a quick discussion about that.</p> <p>20 The first name you reference is Gary. Who is 21 Gary?</p> <p>22 A Gary is a designer or drafter.</p> <p>23 Q Was he at this time a Sioux Steel employee?</p> <p>24 A Yes.</p> <p>25 Q And then the next name is Tim?</p>	Page 38	<p>1 Q What do you mean by you're preparing for the 2 manufacture of the hopper bins?</p> <p>3 A Creating weld fixtures for operations to use.</p> <p>4 Q To your knowledge had any bins -- exemplar bins of any 5 type been manufactured and produced during -- by or in 6 August of 2012?</p> <p>7 A I'm sorry. What type of bins?</p> <p>8 Q The hopper bins at issue, any sort of exemplar or any 9 other type of hopper bins, had any been produced?</p> <p>10 A No.</p> <p>11 Q I guess what I'm driving at is -- and see if you agree 12 with this or not: Sioux Steel was going forward with 13 the manufacture of these bins and almost were not 14 waiting necessarily for what KC Engineering has to say?</p> <p>15 A We were going down parallel paths of being prepared to 16 manufacture.</p> <p>17 (Exhibit 9 is marked for identification.)</p> <p>18 MR. TOBIN: Why don't we take a short break if 19 that's okay.</p> <p>20 MR. GOODSELL: Sure.</p> <p>21 (Recess taken from 9:59 a.m. to 10:14 a.m.)</p> <p>22 BY MR. TOBIN:</p> <p>23 Q Before we turn to Exhibit 9, I just want to circle back 24 to a few issues.</p> <p>25 The calculations. We were discussing</p>	Page 40

<p style="text-align: right;">Page 41</p> <p>1 KC Engineering's proposal, which is Exhibit 7, and you 2 told me that you don't believe that the calculations 3 were ever asked for by KC Engineering. Did I say -- 4 A Not that I recall. 5 Q Okay. And that was going to be part of what I was 6 going to ask. 7 Do you know for sure they were never asked for, or 8 do you just not have a recollection as you sit here of 9 a request for them? 10 A Can you repeat that? 11 Q Sure. Do you know for sure that they were never asked 12 for, or are you telling me you just don't have a 13 recollection of them asking for them? 14 A I don't have a recollection, but if they would have 15 asked for the calculations, we would have sent the 16 calculations. 17 Q Well, you'll agree with me that in their proposal, 18 Exhibit 7, they're requesting the calculations? 19 MR. GOODSELL: Object to the form of the question. 20 You can go ahead and answer. 21 THE WITNESS: Yes. 22 BY MR. TOBIN: 23 Q All right. The other topic I want to circle back to is 24 with soy meal and specifically our discussion about -- 25 I think you told me on a few different occasions that</p>	<p style="text-align: right;">Page 43</p> <p>1 this is a better way to come at it. Had you known from 2 the beginning, at the end of 2011/early 2012 when 3 you're doing the design, if you knew or anticipated 4 that soy meal was going to be used in these hopper 5 bins, would you have done anything different in your 6 design? 7 MR. GOODSELL: Excuse me, Counsel. In the 8 structural design? 9 MR. TOBIN: Correct. 10 THE WITNESS: Not necessarily. The design 11 standards referenced or that we use don't distinguish 12 between those, and again, the same math is used for 13 those dynamic flow conditions. They may occur at 14 different frequencies, but the same overpressure factor 15 is used. 16 BY MR. TOBIN: 17 Q But would you not do something in the design to try to 18 eliminate or reduce the risk of the soy meal bridging? 19 A Not in the structural design. 20 Q In what other design would you account for that? 21 A Can you rephrase that question or repeat that one? 22 Q Well, you said not in the structural design. 23 A Right. 24 Q So I didn't know if -- 25 A Not in the structural design, yes.</p>
<p style="text-align: right;">Page 42</p> <p>1 the same design standards would be used on a hopper 2 like this whether it's soy meal or a free-flowing 3 grain. 4 Did I paraphrase what you were telling me 5 accurately? 6 A Yes, the math would be the same. 7 Q Okay. And what I want to -- I'm going to try to come 8 at this from a few different angles and just see what 9 you say, but... 10 You'll agree with me that a major problem or 11 challenge with soy meal is the possibility of it 12 bridging, correct? 13 A Yes. 14 Q And especially vis-a-vis a free-flowing grain? 15 A Free-flowing grains can be subject to the same dynamic 16 flow conditions that soy meal would be as well. 17 Q Correct. Free-flowing grain can bridge, but you'll 18 agree with me that that's a far more rare occurrence 19 than bridging with soy meal? 20 A The frequency as to which they're subject to those 21 dynamic loads may be different, yes, but the math is 22 the same. When you go back to the math, the 23 overpressure factor accounts for those dynamic flow 24 conditions in the same manner. 25 Q Correct. Had you known from the beginning -- maybe</p>	<p style="text-align: right;">Page 44</p> <p>1 Q Okay. All right. Will you agree with me that a 2 45-degree-angle cone will or could promote bridging of 3 soy meal? 4 A Not necessarily. It depends on the condition of the 5 material inside the hopper. 6 Q We'll come back to it after a bit. I'm going to hand 7 you what's been marked as Exhibit 9, and Exhibit 9 is a 8 report from KC Engineering to you dated August 28, 9 2012, following their analysis and review of the 18- 10 and 30-foot diameter hopper cones? 11 A Yes. 12 Q Exhibit 9's got several pages to it, and the first two 13 pages would be the report from KC Engineering, the 14 letter report? 15 A Yes. 16 Q And then the next two pages are the table of contents 17 for the RISA model? 18 A Yes. 19 Q And we already talked about this, and the table of 20 contents makes it clear: The RISA model is over a 21 thousand pages long? 22 A Yes. 23 Q So that's why I didn't include the whole thing. But my 24 point is, is you did receive the complete printout from 25 the RISA model when you received the first two pages of</p>

Page 45	Page 47
<p>1 <u>Exhibit 9?</u></p> <p>2 A We did.</p> <p>3 Q And then after the table of contents from the RISA 4 model, there are 26 additional pages, and I'm going to 5 call them the KC Engineering working papers or design 6 papers. And you would have received those 26 pages as 7 well when you received their report?</p> <p>8 A Yes.</p> <p>9 Q So it's a long way of saying: On or about August 28 10 you received from KC Engineering their two-page letter 11 report, the very thick RISA printout, as well as 12 26 pages of KC Engineering's working papers?</p> <p>13 A Yes.</p> <p>14 Q Okay. When you received their report, did you read it?</p> <p>15 A Yes.</p> <p>16 Q What, if anything, did you do with the RISA printout?</p> <p>17 A Not really -- there's not much you can do with a model. 18 I mean there's a lot of pages that you didn't really -- 19 I couldn't really do a whole lot with.</p> <p>20 Q And it's my understanding that the RISA model would say 21 nothing about the vertical panel sections that we're 22 here to talk about for this hopper cone.</p> <p>23 Do you agree with that?</p> <p>24 A The models don't have any of the bolted joint 25 connection design.</p>	<p>1 A I would agree with that, yes.</p> <p>2 Q And we can look specifically -- if I can find it quick.</p> <p>3 It's toward the back. The lawyer number is</p> <p>4 Plaintiff 28, and the handwritten KC Engineering number 5 is 22.</p> <p>6 On this page you'll agree with me that</p> <p>7 KC Engineering did a review of the horizontal seam for 8 the horizontal connection?</p> <p>9 A Yes.</p> <p>10 Q And as we talked earlier, that would encompass the 11 three rows of bolts at the top of the panel?</p> <p>12 A Yes.</p> <p>13 Q And it's plain that there is no review of the vertical 14 seam, correct?</p> <p>15 A Yes.</p> <p>16 Q Do you recall when you received this report in August, 17 late August of 2012, noting that there was no review of 18 the vertical seam?</p> <p>19 A I did not know that at the time, no.</p> <p>20 Q You'll agree with me, though, that KC Engineering 21 provided information to you showing which seams they 22 did and did not review?</p> <p>23 A The calculations on the page you're talking about 24 reference the horizontal seam.</p> <p>25 Q And you'll agree with me that if you had reviewed those</p>
Page 46	Page 48
<p>1 Q So can we agree that the RISA report really doesn't 2 have anything to do with what we're here to talk about 3 today?</p> <p>4 A Not necessarily. The RISA model is going to have 5 stresses in it that would be used for what we're 6 talking about today.</p> <p>7 Q Okay. All right. But it doesn't speak to the vertical 8 seams, that we'll talk about later, the vertical seams 9 where it ultimately failed on this hopper bin when it 10 collapsed -- or when the material came out of it, 11 I should say.</p> <p>12 A Yes.</p> <p>13 Q Okay. And the RISA report wouldn't talk about those 14 bolted connections?</p> <p>15 A It would not.</p> <p>16 Q Okay. The 26 pages that KC Engineering included from 17 their file, did you review those when you received the 18 report?</p> <p>19 A Not in depth, no.</p> <p>20 Q Since the failure at issue up until today have you had 21 a chance to go through those 26 pages in detail?</p> <p>22 A Yes.</p> <p>23 Q Will you agree with me that nowhere in those 26 pages 24 does KC Engineering do any review of those vertical 25 seams?</p>	<p>1 26 pages thoroughly and carefully, you would have seen 2 and recognized that there was no design review of the 3 vertical seam?</p> <p>4 MR. GOODSELL: I'm going to object to the form and 5 foundation of the question.</p> <p>6 You can go ahead and answer.</p> <p>7 THE WITNESS: Honestly I focused on the 8 conclusions of their report and focused on the areas 9 that they said needed to be addressed.</p> <p>10 You know, we did our design and sent it to KC to 11 be vetted and, you know, assumed that they were going 12 to check the entire design of the hopper.</p> <p>13 BY MR. TOBIN:</p> <p>14 Q Now, in their report on <u>Exhibit 9</u> they do identify one 15 issue with the 30-foot diameter hopper, correct?</p> <p>16 A Yes.</p> <p>17 Q And it's my understanding that that concern has to do 18 with the legs of the hopper bin structure and not 19 anything to do with the cone?</p> <p>20 A Yes.</p> <p>21 Q And then in a follow-up report between you and 22 KC Engineering, the issue with the legs, that issue was 23 resolved to the mutual satisfaction of yourself and 24 KC Engineering?</p> <p>25 A Yes. We responded that we didn't agree with their --</p>

Page 49	Page 51
<p>1 with the report, and we ultimately came to a conclusion 2 that the legs were indeed okay.</p> <p>3 Q At no time did you ever specifically address with 4 KC Engineering anything -- let me back up. 5 At no time did you specifically address those 6 vertical seams with KC Engineering, correct?</p> <p>7 A We did not.</p> <p>8 Q And at the time KC Engineering did its review, it did 9 not have your working file, <u>Exhibit 5</u>, correct?</p> <p>10 MR. GOODSELL: Object to the form of the question. 11 You can go ahead and answer.</p> <p>12 THE WITNESS: Correct.</p> <p>13 BY MR. TOBIN:</p> <p>14 Q I'm going to hand you what was marked as <u>Exhibit 4</u> from 15 yesterday. <u>Exhibit 4</u> is a series of e-mails. I think 16 the first one is actually on the third page. 17 If you want to take a few minutes and go ahead and 18 review that, then we'll have some questions about it. 19 (Pause in the proceedings.) 20 Have you reviewed <u>Exhibit 4</u>?</p> <p>21 A Yes. 22 Q We're going to start on the third page. This e-mail 23 string starts with an e-mail from Les Garcia to you 24 about some questions he had about some air cannons, 25 correct?</p>	<p>1 sold and installed down in Mexico, correct? 2 A Correct. 3 Q And my question is maybe one you don't have an answer 4 for, but how could a bin be sold by Sioux Steel where 5 you're having this add-on equipment and engineering 6 isn't going to be consulted? 7 A Engineering is responsible for the structural design. 8 Accessories on our bins, you know, that sales deals 9 with, you know, sales will do that, and engineering 10 won't be involved with the sale of accessories for 11 bins. 12 Q So it was not a surprise to you that sales is selling a 13 product and they're putting some accessories to it 14 without consulting with you first? 15 A Can you repeat that question? 16 Q Sure. It was not a surprise to you that sales is 17 selling a product and they're adding some accessories 18 to it without consulting with you first? 19 A We wouldn't necessarily know what accessories are being 20 sold with the bin. 21 Q Correct. And I guess what I'm trying to get to is if 22 sales is going to include some accessories with a 23 product, it's not normal for that to be run through 24 engineering first? 25 A Correct.</p>

Page 50	Page 52
<p>1 A Yes. 2 Q And you respond to Les, and you let him know that 3 you've never dealt with air cannons, correct? 4 A Yes. 5 Q We know at this point in time in late July of 2014 that 6 the bin that ultimately fails, it has already been 7 purchased and is being shipped and may even be in 8 operation down in Mexico, correct? 9 MR. GOODSELL: I'm going to object to the form and 10 the foundation of the question. 11 You can go ahead and answer.</p> <p>12 THE WITNESS: Per Les it appears it was being 13 installed at that point.</p> <p>14 BY MR. TOBIN:</p> <p>15 Q Correct. Okay. And I don't think there's a dispute, 16 but the bin that went down to Mexico that's being 17 installed, that had air cannons with it, correct? 18 A Per the e-mails, that's what it looks like, yes. 19 Q And it's my understanding that you had no involvement 20 with anyone about whether air cannons should or should 21 not be on that bin that's being installed down in 22 Mexico in late July of 2014, correct? 23 A Correct. 24 Q In fact, you're making that clear in <u>Exhibit 4</u> that you 25 were not consulted prior to that particular bin being</p>	<p>1 Q But these particular accessories, the air cannons, that 2 was of some concern for you, as expressed in <u>Exhibit 4</u>, 3 right? 4 A It was something that I had never -- never dealt with 5 before. 6 Q Correct. But if you look on page 2 towards the top, 7 your e-mail back to Les, you are highlighting for Les a 8 concern about air cannons and non-free-flowing product, 9 correct? 10 A Yes. 11 Q And that further confirms that when you designed this 12 bin -- and we talked about this -- that you were not 13 contemplating soy meal, correct? 14 A Again, it goes back to the math; that the same math is 15 going to apply and that overpressure factor is going to 16 account for the dynamic flow conditions of the 17 commodities that would be placed in the hopper bin. 18 Q Well, then explain that e-mail that we're looking at. 19 Because you're telling Les that you're more concerned 20 with eccentric loads that non-free-flowing materials 21 could place on the hopper, right? 22 A Yes. 23 Q What are the eccentric loads that the non-free-flowing 24 materials could place on the hopper? What could those 25 be?</p>

Page 77	Page 79
<p>1 You may answer.</p> <p>2 THE WITNESS: It's difficult to say whether or not</p> <p>3 it would have failed.</p> <p>4 BY MR. TOBIN:</p> <p>5 Q Why?</p> <p>6 A Because if it's designed per the design standard and if</p> <p>7 the design is there and you have the proper factor of</p> <p>8 safety on it -- again, there would be issues with</p> <p>9 design standards. There would be, you know, engineers</p> <p>10 and everybody else going around, you know, saying we</p> <p>11 need to make changes to the design standards.</p> <p>12 Q Well, I guess I'll just move on.</p> <p>13 In that same e-mail you're again stating that</p> <p>14 Sioux Steel would limit the height of the bins. And I</p> <p>15 know we've talked about this, but again why are we</p> <p>16 still in February of 2015 wanting to limit the height?</p> <p>17 A From a flow perspective.</p> <p>18 Q To hopefully try to keep material from bridging?</p> <p>19 A To help ensure that the material is -- that the</p> <p>20 customer is able to get the material out of the hopper</p> <p>21 without any issues.</p> <p>22 Q On page 2 there is an e-mail from Randy to Les, and</p> <p>23 you're not included on it. It's kind of towards the</p> <p>24 top of the page. And it talks about two bins being</p> <p>25 sold to Molinos down in Mexico. Do you see that?</p>	<p>1 work?</p> <p>2 A To my knowledge, yes.</p> <p>3 Q Who did the engineering design for that remedial work</p> <p>4 on that bin?</p> <p>5 A I did.</p> <p>6 Q Did you have that vetted through any other outside</p> <p>7 company?</p> <p>8 A I did not.</p> <p>9 Q Quickly -- I'm sorry for shifting gears, but back to</p> <p>10 Exhibit 4. This is the e-mail in August of '14. I</p> <p>11 just want to make sure I'm correct that when you and</p> <p>12 Les are discussing the application of soy meal, air</p> <p>13 cannons, and heights, at no time in August of '14 do</p> <p>14 you come back to KC Engineering to ask for their input</p> <p>15 as to these issues, do you?</p> <p>16 A No.</p> <p>17 Q Is it correct that -- and I didn't print it off, but we</p> <p>18 discussed earlier that when KC Engineering gave you</p> <p>19 their original report at the end of August, they had an</p> <p>20 issue with the legs on the 30-diameter bin, correct?</p> <p>21 A That's correct.</p> <p>22 Q And then we talked that some additional work was done,</p> <p>23 some discussions were had, and that those issues were</p> <p>24 then resolved to your satisfaction and KC Engineering's</p> <p>25 satisfaction?</p>
Page 78	Page 80
<p>1 A Yes.</p> <p>2 Q As you sit here today, do you know anything else about</p> <p>3 that other bin? Do you know the size? anything?</p> <p>4 A I do not. I know there is another, but I don't know</p> <p>5 anything other than that.</p> <p>6 Q You said that you do know there is another bin?</p> <p>7 A Yes.</p> <p>8 Q Do you know where that bin is?</p> <p>9 A The one that -- the one that I have discussed or been</p> <p>10 involved with is in Veracruz.</p> <p>11 Q Do you know the size of that bin?</p> <p>12 A I don't recall for sure.</p> <p>13 Q Do you know if soy meal is being used in it?</p> <p>14 A Yes.</p> <p>15 Q Was anything done to that bin post failure?</p> <p>16 A Yes.</p> <p>17 Q What was done?</p> <p>18 MR. GOODSELL: I'm going to object to form and</p> <p>19 foundation in terms of remedial action.</p> <p>20 You can go ahead and answer the question.</p> <p>21 THE WITNESS: We provided new hopper panels to be</p> <p>22 installed on the hopper.</p> <p>23 BY MR. TOBIN:</p> <p>24 Q Is that the only bin to your knowledge where</p> <p>25 Sioux Steel had to go back and perform some remedial</p>	<p>1 A Correct.</p> <p>2 Q And then I believe there was an issue about some</p> <p>3 additional payment to KC Engineering for some</p> <p>4 additional work related to that.</p> <p>5 Does that comport with your memory?</p> <p>6 A Yes. They invoiced us for the check of -- the</p> <p>7 discrepancy that we had with them based on the first</p> <p>8 report, they invoiced us to reevaluate the issue that</p> <p>9 they had on the 30-foot hopper.</p> <p>10 Q And I guess my point is, is that -- well, and then in</p> <p>11 connection with that discrepancy they then issued an</p> <p>12 addendum letter clarifying the issue and making clear</p> <p>13 that they're now okay with the legs of the 30-diameter</p> <p>14 bin?</p> <p>15 A Correct.</p> <p>16 Q Following your receipt of that addendum letter -- and I</p> <p>17 believe that was in October of '12 -- did you have any</p> <p>18 discussion with anyone at KC Engineering about these</p> <p>19 hopper bins again?</p> <p>20 A No.</p> <p>21 Q Post failure have you had any contact with</p> <p>22 KC Engineering about these bins?</p> <p>23 A No.</p> <p>24 MR. GOODSELL: You're referring to him, Counsel,</p> <p>25 personally?</p>

Page 81	Page 83
<p>1 MR. TOBIN: Correct.</p> <p>2 MR. GOODSELL: Okay.</p> <p>3 Would this be a good time for me to take a coffee</p> <p>4 break --</p> <p>5 MR. TOBIN: Absolutely.</p> <p>6 MR. GOODSELL: -- or a break because of coffee?</p> <p>7 MR. TOBIN: Sure.</p> <p>8 (Recess taken from 11:20 a.m. to 11:35 a.m.)</p> <p>9 BY MR. TOBIN:</p> <p>10 Q Chad, I want to talk a little bit about the work -- the</p> <p>11 remedial work that was done at the Veracruz bin that we</p> <p>12 were just talking about.</p> <p>13 What is different -- I know you said that they</p> <p>14 replaced the hopper panels. What's different about</p> <p>15 them? For example, is it still a 45-degree angle, or</p> <p>16 did it go to a different angle?</p> <p>17 A Hopper angle is the same at 45 degrees.</p> <p>18 Q Are there more bolts, or is it still a single line?</p> <p>19 A There were additional bolts placed in the panels, and</p> <p>20 the edge distance from the bolts to the edge of the</p> <p>21 panel was increased.</p> <p>22 Q Were thicker panels used?</p> <p>23 A Yes.</p> <p>24 Q How much thicker? Do you know what it went -- from</p> <p>25 what to what?</p>	<p>1 Q I mean do you know if it's even any?</p> <p>2 A We have sold hopper bins post failure, yes.</p> <p>3 Q You just don't know how many?</p> <p>4 A Correct.</p> <p>5 Q Do you know if any of those went to Mexico or somewhere</p> <p>6 in a hot, humid climate?</p> <p>7 A I don't know.</p> <p>8 Q Post failure I believe the only communications that I</p> <p>9 have would be this e-mail string Exhibit 1, okay, and</p> <p>10 what I want to ask some questions about is if you</p> <p>11 recall any conversations with Les about this bin and</p> <p>12 the failure other than what's on Exhibit 1.</p> <p>13 A I don't recall any conversations.</p> <p>14 Q What about with Chris?</p> <p>15 A He and I would have had conversations post failure,</p> <p>16 yes.</p> <p>17 Q Do you recall those discussions as you sit here now?</p> <p>18 A Yes.</p> <p>19 Q What do you recall?</p> <p>20 A The day after the failure, when they sent pictures and</p> <p>21 I was able to look at the pictures and immediately drew</p> <p>22 a conclusion to what I thought was, you know, maybe the</p> <p>23 failure mode and went into the design and figured out</p> <p>24 the math error on the spreadsheet that resulted in the</p> <p>25 utilization ratios being much higher than what we</p>
<p>1 A I don't recall off the top of my head.</p> <p>2 Q Any other differences that you can think of?</p> <p>3 A No.</p> <p>4 Q Did you go redesign and reengineer that, or did you go</p> <p>5 back to Exhibit 5, your old work, and just use</p> <p>6 different -- you know, plug in information at that</p> <p>7 level?</p> <p>8 A Plugged in different information to the spreadsheet</p> <p>9 that designed the vertical joints in the hopper cone.</p> <p>10 Q Do you still have those in your office?</p> <p>11 A Yes.</p> <p>12 Q Would you be able to get those to the attorneys, a copy</p> <p>13 of that?</p> <p>14 A Yes.</p> <p>15 Q If you know, pre-failure it sounds like Sioux Steel</p> <p>16 sold only two of the hopper bins.</p> <p>17 Would that sound right?</p> <p>18 A Boy, I don't know for sure.</p> <p>19 Q And the only reason I say that is because it sounds</p> <p>20 like to your knowledge they've only gone back to do</p> <p>21 remedial work on one.</p> <p>22 A Correct.</p> <p>23 Q Do you have any idea of how many hopper bins have been</p> <p>24 sold post failure?</p> <p>25 A I don't have a number, no.</p>	<p>1 Q originally thought they were on those vertical bolted</p> <p>2 seams.</p> <p>3 Q So you discovered that mathematical error the day after</p> <p>4 the failure?</p> <p>5 A Yes.</p> <p>6 Q And you discussed that with Chris?</p> <p>7 A Yes.</p> <p>8 Q Have you discussed that failure with anyone else at</p> <p>9 Sioux Steel outside of Ms. Ellis or Mr. Goodsell?</p> <p>10 A Yes.</p> <p>11 Q Who else have you discussed it with?</p> <p>12 A Scott Rysdon, the CEO.</p> <p>13 Q On more than one occasion?</p> <p>14 A We've met multiple times, yes.</p> <p>15 Q Did you inform Mr. Rysdon of the mathematical error on</p> <p>16 the vertical seam?</p> <p>17 A Yes.</p> <p>18 Q One of the engineering consultants who has been out</p> <p>19 there I think goes by ESI.</p> <p>20 Have you seen a copy of ESI's report?</p> <p>21 A Yes.</p> <p>22 Q Have you reviewed that report?</p> <p>23 A Yes.</p> <p>24 Q Did you speak with anyone at ESI?</p> <p>25 A I did not.</p>

Page 85	Page 87
<p>1 Q Did you play any role in furnishing documents or 2 information to ESI?</p> <p>3 A We didn't provide them any documents prior to their 4 report coming out.</p> <p>5 Q And I don't have a copy of it with me, and I can grab 6 it if we need to, but in the ESI report they have 7 copies of some of KC Engineering's documents that were 8 forwarded to you with their August report, and I'm 9 wondering: Do you have any idea as to how ESI would 10 have gotten their hands on that information?</p> <p>11 A We must have provided that information.</p> <p>12 Q Correct. I understand things are happening at 13 different levels, and I understand that you're not in 14 charge of all that. But I'm just wondering if you were 15 tasked with putting together information to get to ESI.</p> <p>16 A No.</p> <p>17 Q When I read the ESI report, I didn't see anywhere any 18 discussion about Sioux Steel's design error on those 19 vertical panels.</p> <p>20 Did you see anything in the ESI report discussing 21 Sioux Steel's design error?</p> <p>22 A I don't recall.</p> <p>23 Q And I don't believe in the documents referenced by ESI 24 that they ever had a copy of your work file, which has 25 been marked Exhibit 5.</p>	<p>1 he's instructed not to answer.</p> <p>2 BY MR. TOBIN:</p> <p>3 Q I'm going to give you a chance to answer the question. 4 He may not let you, but I'm going to let you know that 5 if we have to have this in front of a judge, we'll be 6 back together again for an opportunity for you to 7 answer that question.</p> <p>8 MR. GOODSELL: Court Reporter, would you read it 9 back again, please.</p> <p>10 (The record was read by the reporter as follows: 11 Question: "From your perspective who is more at 12 fault, Sioux Steel for the design error or my client 13 for what you contend they did wrong?")</p> <p>14 MR. GOODSELL: Okay. I'm going to reassert the 15 objection and instruct you to go ahead and answer.</p> <p>16 THE WITNESS: Sioux Steel is responsible for our 17 product and for the design of our product, but I don't 18 feel that we're responsible for the failure. We 19 designed our product per design standards, applied the 20 appropriate factor of safety, and sent it out to be 21 vetted, to be -- to have that additional step of safety 22 there.</p> <p>23 So, again, I feel that, you know, we are 24 responsible -- we own up to -- you know, I made a 25 mistake. Sioux Steel is responsible for their product,</p>
Page 86	Page 88
<p>1 Do you recall them discussing anything from your 2 work file, Exhibit 5, in their report?</p> <p>3 A I do not.</p> <p>4 Q I know you told me that you discussed the mathematical 5 error with Chris and Scott.</p> <p>6 Did you ever provide a copy of your work papers, 7 Exhibit 5, to either Chris or Scott?</p> <p>8 A I would have had them in hand when we met, yes.</p> <p>9 Q Do you have any recollection of giving them a copy or 10 them retaining a copy.</p> <p>11 A I don't remember. Typically they don't keep stuff like 12 that. I mean I have all that information. So -- I 13 don't recall for sure whether or not they have a copy.</p> <p>14 Q From your perspective, what did KC Engineering do 15 wrong?</p> <p>16 A They failed to analyze the vertical joint in the hopper 17 panels that ultimately failed on the hopper down in 18 Mexico.</p> <p>19 Q Is there anything else?</p> <p>20 A No. Ultimately that's what it comes down to.</p> <p>21 Q From your perspective who is more at fault, Sioux Steel 22 for the design error or my client for what you contend 23 they did wrong?</p> <p>24 MR. GOODSELL: I'm going to object to the form and 25 foundation of the question. This is a legal issue, and</p>	<p>1 but we sent out this design to be vetted so that 2 something -- you know, a failure like this would not 3 happen.</p> <p>4 BY MR. TOBIN:</p> <p>5 Q So you place responsibility for the event in Mexico on 6 whom?</p> <p>7 MR. GOODSELL: Again I'm going to object to the 8 form and foundation of the question.</p> <p>9 You may go ahead and answer.</p> <p>10 THE WITNESS: Ultimately, the design was missed by 11 both people. I mean, I made the mistake. Again, I own 12 up to that. There was a math error in the design 13 spreadsheet. And we sent it out to be vetted, and it 14 didn't get -- it didn't get caught. So there's 15 responsibility on both parties.</p> <p>16 BY MR. TOBIN:</p> <p>17 Q Do you think there's any responsibility or fault on 18 yourself for not providing Exhibit 5 to KC Engineering?</p> <p>19 A I would say no. I haven't really considered it before 20 today honestly.</p> <p>21 Q Do you think there's any fault or responsibility on you 22 for not thoroughly going through what KC Engineering 23 sent to you at the end of August 2012?</p> <p>24 A I don't because, you know, we sent it out to be 25 reviewed by them, you know. We aren't reviewing their</p>

Page 89	Page 91
<p>1 work; they're reviewing our work is how I look at it.</p> <p>2 Q Let's talk a bit about Mr. Nohr. We chatted about him</p> <p>3 and his report a bit ago. Just to set the stage -- not</p> <p>4 to kind of rehash, but just to set the stage: Mr. Nohr</p> <p>5 believes that the mechanism of failure started at the</p> <p>6 bottom of the hopper cone, correct?</p> <p>7 I'm not asking you to agree with him, but</p> <p>8 that's -- you understand that's what Mr. Nohr's</p> <p>9 conclusion is?</p> <p>10 A Correct.</p> <p>11 Q Okay. And I think you told me that per the math the</p> <p>12 failure should have started further up in the hopper</p> <p>13 cone, towards the top of the hopper cone?</p> <p>14 A Correct.</p> <p>15 Q And I just want to flesh some of that out and make sure</p> <p>16 I understand what you're thinking.</p> <p>17 You said you didn't see the video of the event?</p> <p>18 A I did not.</p> <p>19 Q Is the sole basis for your disagreement with Mr. Nohr</p> <p>20 the math that it's overstressed at the 27-foot</p> <p>21 diameter? Is that the basis for your disagreement with</p> <p>22 Mr. Nohr's conclusion that it actually started at the</p> <p>23 bottom?</p> <p>24 A Yes.</p> <p>25 Q Have you ever spoken with Mr. Nohr in any respect about</p>	<p>1 where it started, okay, if you can just mentally accept</p> <p>2 that for me -- and we've already looked in Exhibit 5</p> <p>3 that at the 4-foot diameter the utilization ratio is</p> <p>4 good, correct?</p> <p>5 A Correct.</p> <p>6 Q So what I want to ask just to gauge your reaction is:</p> <p>7 If Mr. Nohr is correct that the failure began at the</p> <p>8 bottom of the hopper cone where the math says there is</p> <p>9 no mistake, wouldn't that failure mean that Sioux Steel</p> <p>10 is not responsible, nor is KC Engineering responsible?</p> <p>11 MR. GOODSELL: I'm going to object to the form and</p> <p>12 foundation of the question.</p> <p>13 You can go ahead and answer.</p> <p>14 THE WITNESS: After reading Nohr's report and</p> <p>15 comparing it to what we were looking at in the design</p> <p>16 calculations, we struggled to make sense of why that --</p> <p>17 why he would have come to that conclusion, and it</p> <p>18 didn't make sense with the math.</p> <p>19 BY MR. TOBIN:</p> <p>20 Q And I appreciate that, but I'm asking you to set that</p> <p>21 aside and if Nohr is right -- I know it disagrees with</p> <p>22 the math that you have.</p> <p>23 A Right.</p> <p>24 Q Okay. But if Nohr is right and the failure began at an</p> <p>25 area where it says it shouldn't fail, wouldn't that</p>
Page 90	Page 92
<p>1 that failure down in Mexico or his report?</p> <p>2 A I have not.</p> <p>3 Q Did you ever communicate your disagreement with</p> <p>4 Mr. Nohr's conclusion to anyone at Sioux Steel?</p> <p>5 A I don't recall for sure. We had multiple conversations</p> <p>6 about it, but I don't know if we specifically discussed</p> <p>7 disagreement with Nohr's report.</p> <p>8 Q To your knowledge has anyone asked Mr. Nohr -- from</p> <p>9 Sioux Steel -- about that conclusion of it starting at</p> <p>10 the bottom and how he arrived at that?</p> <p>11 A I'm sorry. Can you repeat that question?</p> <p>12 Q Well, maybe -- you haven't been involved in any</p> <p>13 discussions with Mr. Nohr about his report?</p> <p>14 A I have not.</p> <p>15 Q And to your knowledge no one has taken your concern</p> <p>16 with Mr. Nohr's conclusion back to Mr. Nohr?</p> <p>17 A Not to my knowledge.</p> <p>18 Q Did you ever assemble any documents to provide to</p> <p>19 Mr. Nohr?</p> <p>20 A I did not.</p> <p>21 Q If Mr. Nohr is correct -- and I know you disagree with</p> <p>22 that, so I'm kind of asking you to make a mental leap</p> <p>23 that you don't want to do. But hypothetically</p> <p>24 speaking, if Mr. Nohr is correct that the mechanism of</p> <p>25 failure was at the bottom of the hopper cone, that's</p>	<p>1 mean that Sioux Steel did nothing wrong and</p> <p>2 KC Engineering did nothing wrong; maybe it's the</p> <p>3 standard?</p> <p>4 A I agree that could be the case.</p> <p>5 MR. TOBIN: Why don't we take another break. We</p> <p>6 may be nearing the end.</p> <p>7 (Recess taken from 11:55 a.m. to 12:11 p.m.)</p> <p>8 BY MR. TOBIN:</p> <p>9 Q Chad, I'm almost done.</p> <p>10 I want to go back to Exhibit 5, which would be</p> <p>11 your design documents, and specifically that page 1376</p> <p>12 on the vertical seams, and what I want to try to get a</p> <p>13 better understanding of is -- you've referred to the</p> <p>14 mistake as a mathematical error in your testimony, and</p> <p>15 I want to get a sense as to what that means.</p> <p>16 This document, this page 1376, that comes from an</p> <p>17 Excel spreadsheet, correct?</p> <p>18 A Yes.</p> <p>19 Q And you would have been the one who built that</p> <p>20 spreadsheet?</p> <p>21 A Yes.</p> <p>22 Q And you would have been the one who would have inputted</p> <p>23 the formulas into the necessary cells?</p> <p>24 A Yes.</p> <p>25 Q Is the mistake that you put an incorrect formula into</p>

Page 93	Page 95
<p>1 one of the cells so that it produced a number with a 2 better utilization ratio, or was the mistake that you 3 didn't look at or appreciate what those numbers mean 4 under the utilization ratio?</p> <p>5 A It was a mistake in the formula.</p> <p>6 Q It was?</p> <p>7 A Yes.</p> <p>8 Q Which one?</p> <p>9 A So the design spreadsheet was taken from an LRFD 10 design, Load and Resistance Factor Design, and the 11 omega that you see on this sheet here, which is the 12 safety factor, is part of allowable stress design. 13 That used to be a phi, which is a resistance factor, 14 and in LRFD design, you multiply that by -- you know, 15 your allowable load by that, and in allowable stress 16 design you actually divide by that. 17 So instead of dividing by your safety factor to 18 get allowable load, it actually multiplied by the 19 safety factor.</p> <p>20 Q The document that I have in front of me, 1376, shows 21 the 3.89 utilization ratio at the 28-foot diameter, 22 correct?</p> <p>23 A Yes.</p> <p>24 Q Are you telling me that at one point in time a document 25 like this existed that had a better utilization ratio,</p>	<p>1 A It was a design spreadsheet that had been used to do 2 LRFD design in the past, and we're utilizing allowable 3 stress design for the hopper design, and so you change 4 from a phi to an omega, you know, your safety factor. 5 So that's what -- and so instead of dividing by 6 your safety factor, it essentially multiplied by a 7 safety factor to figure out what your allowable load 8 is. 9 Q But to your knowledge there wouldn't be a print-off of 10 that other document that would show the much better 11 utilization ratios? 12 A Not to my knowledge. Not that I'm aware of. 13 Q So on the original one -- well, on the one that we have 14 in front of us, there's an omega and then across from 15 it is a 2, and I thought you were saying that might be 16 the area where on the original one there would have 17 been something different? 18 A Yes. 19 Q And instead of an omega it's a... 20 A A phi. 21 Q Okay. And then what number comes across from it? 22 A It would be a .9 or a .75, depending on whether it's 23 tensile or yield. 24 Q So then if I'm understanding correctly, the mistake you 25 made is, is you used an incorrect formula when you were</p>
<p>1 or are you telling me that the 3.89 on this document is 2 incorrect?</p> <p>3 A This document has been changed to be correct.</p> <p>4 Q So the document we're looking at -- again, 1376 -- this 5 probably would have been fixed or created post failure?</p> <p>6 A Yes.</p> <p>7 Q Do you still have the papers that you did pre-failure?</p> <p>8 Or is it, once you change the spreadsheet formula, it's 9 kind of gone?</p> <p>10 A It's electronic so I -- yeah, I don't, to my knowledge, 11 have a copy of that.</p> <p>12 Q Do you recall what those utilization ratios were 13 originally?</p> <p>14 A I don't.</p> <p>15 Q Do you know if they were more than 1 or less than 1?</p> <p>16 A It would have been less than 1.</p> <p>17 Q And you didn't catch that error until post failure?</p> <p>18 A Correct.</p> <p>19 Q And -- this is new information for me, so I'm trying to 20 digest it while I'm asking you questions but -- and you 21 went through that a little quick.</p> <p>22 But you were taking a spreadsheet to assess a 23 different issue and kind of were borrowing some 24 information for this particular issue or -- help me 25 understand how we went from the different omega --</p>	<p>1 running the calculations on this spreadsheet, 1376? 2 A Yes.</p> <p>3 MR. TOBIN: With that, let's take another really 4 short break. We'll be back.</p> <p>5 MR. GOODSELL: Go ahead.</p> <p>6 (Recess taken from 12:18 p.m. to 12:25 p.m.)</p> <p>7 MR. TOBIN: I have no further questions.</p> <p>8 Thank you.</p> <p>9 MR. GOODSELL: You have a right to review your 10 deposition and make sure it's written down correctly, 11 or you can waive that right. And I suggest you read it 12 in this particular case.</p> <p>13 THE WITNESS: Okay.</p> <p>14 MR. GOODSELL: You have to tell her you want to 15 read it.</p> <p>16 THE WITNESS: I'd like to read it.</p> <p>17 (Whereupon, at 12:25 p.m. the deposition was 18 concluded.)</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>